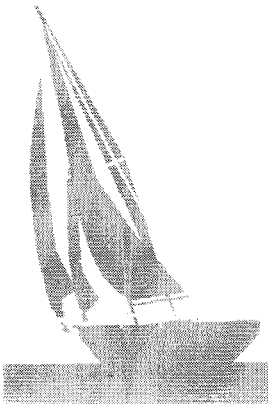


U.S. FEDERAL RADIONAVIGATION PLAN (FRP)

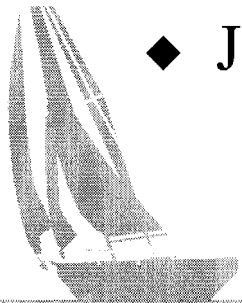
U.S. DEPARTMENT OF TRANSPORTATION
Washington, D.C.





FEDERAL RADIONAVIGATION PLAN

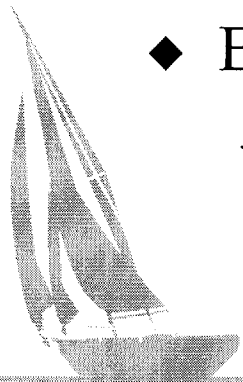
- ◆ Official U.S. Operating Plans and Policies for All Common-Use (Military and Civil) Radionavigation Systems
- ◆ Mandated by the INMARSAT ACT of 1978
- ◆ Jointly Published by DOT and DOD Biennially





VOLPE CENTER/ CENTER FOR NAVIGATION

- ◆ Supports the Office of the Assistant Secretary of Transportation for Transportation Policy (OST/P)
- ◆ Member of the DOT POS/NAV Working Group
- ◆ Executive Secretary of the FRP Working Group
 - Coordinates FRP Preparation and Distribution





FRP WORKING GROUP

- ◆ OST/P
- ◆ Federal Aviation Administration
- ◆ U.S. Coast Guard
- ◆ Federal Highways Administration (inc. FTA, FRA, and NHTSA)
- ◆ Volpe
- ◆ NOAA/National Geodetic Survey
- ◆ National Aeronautics and Space Administration
- ◆ Department of Defense (DUSD/Space)
- ◆ NTIA





WHAT'S IN THE FRP?

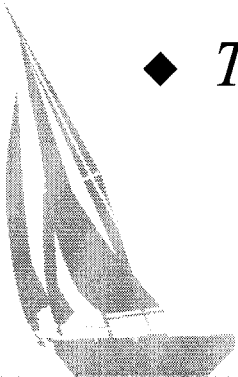
- ◆ Current Federal Government Roles and Responsibilities
- ◆ Policies and Operating Plans
- ◆ System User Requirements
- ◆ Research and Development Plans
- ◆ Technical System Descriptions





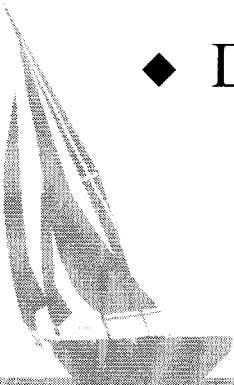
SYSTEMS COVERED BY THE FEDERAL RADIONAVIGATION PLAN

- ◆ *Global Positioning System*
- ◆ *GPS Augmentations*
- ◆ *Loran-C*
- ◆ *Omega*
- ◆ *VOR, VOR/DME*
- ◆ *TACAN*
- ◆ *Radiobeacons*
- ◆ *ILS*
- ◆ *MLS*





1996 FRP - NEW ITEMS

- ◆ Presidential Decision Directive on GPS
 - ◆ GPS Second Civil Frequency Planning
 - ◆ Expanded Discussion of International and Spectrum Issues
 - ◆ Expanded Discussion of Land Applications
 - ◆ Requirements for Inland Waterways Navigation
 - ◆ New Section on DOD R&D
 - ◆ Description of GPS NOTAM/Aero. Information System
- 



INTERNATIONAL ISSUES

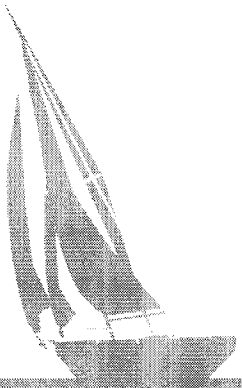
- ◆ Radionavigation services and systems should be technically and politically acceptable to diverse international groups including NATO and Other Allies, ICAO, IMO, and ITU
- ◆ Goals of standardization and cost minimization of user equipment
- ◆ Future: Possible Use of Internationally Shared Systems





SPECTRUM ISSUES

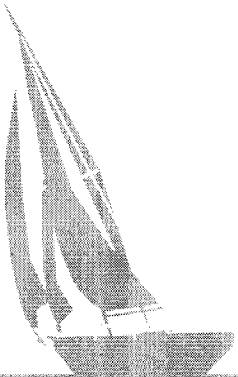
- ◆ “Robust and Satisfactory Radionavigation Services Require Adequate Spectrum Bandwidth, With the Highest Level of Integrity and Availability”.
- ◆ National and International Roles and Responsibilities





DOD R&D

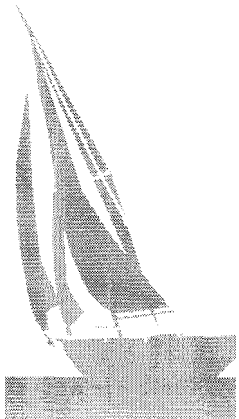
- ◆ New Section in Section 4 - Radionavigation Research and Development Summary
 - GPS Security Program
 - Multimode Receivers
 - Improvements in Precise Time and Time Interval





GPS NOTAM/AERONAUTICAL INFORMATION SYSTEM

- ◆ New Section in Appendix A
- ◆ Site-Specific GPS Outages
- ◆ Military: GPS NOTAMS
- ◆ FAA: Aeronautical Information





SYSTEMS POLICY - 1996 FRP

- ◆ GPS: Two Levels of Service
 - SPS: Available Worldwide Free of Direct User Charge
 - PPS: Available Only to Authorized Users

- ◆ GPS: Second Civil Frequency Planning

- ◆ Maritime DGPS
 - IOC Declared January 30, 1996

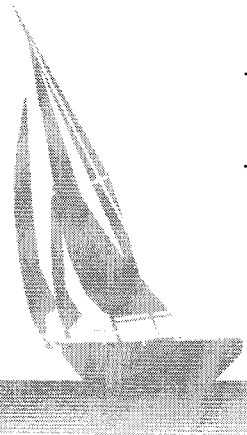




SYSTEMS POLICY - 1996 FRP

◆ Precision Landing Systems

- GPS WAAS Cat 1: IOC 1999, FOC 2001
- ILS CAT I: Phaseout Start 2005, Complete 2010
- GPS LAAS CAT II/III: Available by 2005
- ILS CAT II/III: Phaseout Start 2005, Complete 2010
- Systems Will Be Collocated During Transition Period
- MLS CAT I: Phaseout Start 2005, Complete 2010





SYSTEMS POLICY - 1996 FRP

◆ Transit

- Ceased Operation as a Positioning and Timing System on December 31, 1996

◆ Loran-C

- Plan to Terminate on December 31, 2000
- Response to C.G. Authorization Act of FY96



◆ Omega

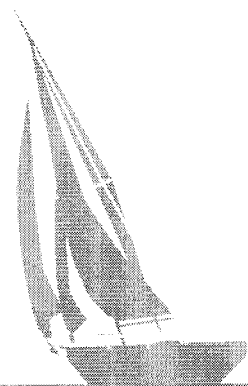
- System Will Terminate on September 30, 1997
- 



SYSTEMS POLICY - 1996 FRP

◆ VOR/DME

- Will Remain Primary Means of Navigation for En Route through Nonprecision Approach Until GPS WAAS is Approved as Primary Means
- Phaseout: Start in 2005, Completion in 2010





SYSTEMS POLICY - 1996 FRP

- ◆ Marine Radiobeacons

- Non-DGPS Marine Radiobeacons Expected to Be Phased Out by 2000

- ◆ Aeronautical Nondirectional Beacons

- Many Functions Now Provided by GPS
- Phaseout: Start in 2000, Rapidly Completed After 2005
- Separate Transition Timeline for Alaska

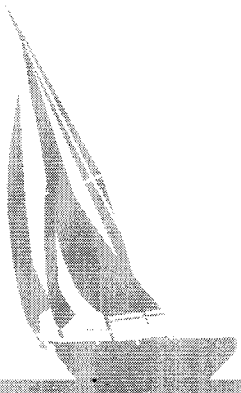




SYSTEMS POLICY - 1996 FRP

◆ TACAN

- DOD Requirement for Land-Based TACAN Will Terminate When Aircraft are Properly Integrated With GPS and GPS is Certified by the DOD for Operation in National and International Controlled Airspace. Target Date to Begin Phaseout is 2005.






AVAILABILITY OF 1996 FRP

- ◆ Free copies available from:

Volpe National Transportation System Center
Kendall Square
Cambridge, MA. 02142
Tel: 617-494-2126

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- ◆ Also on the Internet at *<http://www.navcen.uscg.mil/frp>*